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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,376	08/26/2003	Yoshikazu Miyajima	00862.023098	2042
5514	7590	07/20/2006	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			GUTIERREZ, KEVIN C	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

A

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/647,376	MIYAJIMA, YOSHIKAZU	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kevin Gutierrez	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 17-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed May 15, 2006 have been fully considered but they are not persuasive. Regarding the arguments stated on page 7, the applicant states that Goldstein does not disclose "the cooling/heating element is not facing and spaced away from a reflection surface." The Examiner respectfully disagrees. Figure 2, the temperature adjusting elements 225 are located facing a side the mirror's optical surface 210 and is also spaced a distance of at least the height of the mirror 100. Therefore, this limitation and the rest of the claimed limitations are disclosed by Goldstein.

### *Claim Objections*

2. Claims 29 and 31 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

3. Claim 30 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 17-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Goldstein (US 2003/0169520).

Regarding claim 17, Goldstein discloses

- “a mirror (100) having a reflection surface (102) that reflects light ([0013], lines 2-3);
- a heat-radiation plate (225; cooling/heating elements) arranged facing and spaced away from said reflection surface of said mirror and a outside passage area for light to be incident on and reflected from said reflection surface (fig. 2, where the cooling/heating elements 225 is located below the optical surface 210 (reflection surface), which is facing the optical surface 210 and spaced away at least a distance that is the height of the mirror 100 from the optical surface 210, and light is permitted to be incident on and reflected from the optical surface 210 due to the distant location of cooling/heating elements 225); and
- a cooler configured to cool said heat-radiation plate ([0017] and [0024], lines 7-10).”

Regarding claim 18, Goldstein discloses further comprising a thermometer (302; temperature sensors or the like [0022], lines 5-6) configured to detect a temperature of said mirror ([0020], lines 1-5), wherein said cooler is configured to cool said heat-radiation plate based on the detection obtained by said thermometer ([0024], lines 2-5. where a correction signal utilized to cool cooling/heating elements 225).”

Regarding claim 19, Goldstein discloses “wherein said heat-radiation plate is separated and arranged at plural positions so as to comprise separated plural heat-radiation plates ([0016] and [0023], lines 4-6).”

Regarding claim 20, Goldstein discloses “wherein the passage area is arranged between said separated plural heat-radiation plates ([0016], lines 1-6).”

Regarding claim 21, Goldstein discloses “wherein one of said plural heat-radiation plates is arranged facing said reflection surface of said mirror, and another of said separated plural heat-radiation plates is arranged facing an outer surface, of said mirror, said outer surface being different from said reflection surface ([0016], lines 1-7).”

Regarding claim 22, Goldstein discloses “wherein said heat-radiation plate has a form corresponding to the form of said reflection surface of said mirror ([0020], lines 4-6 and [0016], lines 1-6).”

Regarding claim 23, “Goldstein discloses “wherein said cooler is configured to cool said separated plural heat-radiation plates individually ([0024], lines 1-5).”

Regarding claim 24, “Goldstein discloses “wherein said cooler is configured to cool said heat-radiation plate by circulating coolant ([0024], lines 7-10).”

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Jurca (6,118,527) and Lim (US 2002/0089652).

Regarding claim 25, Goldstein discloses a first thermometer (302) configured to measure the temperature of said mirror, and a controller configured to estimate the amount of the light incident on said mirror ([0027-0028], where temperature map implements radiation by light), a plurality of thermometers ([[0022], lines 1-6), and a control system to control temperature adjusting elements ([0017]).

Goldstein does not disclose “a second thermometer configured to measure temperature of the coolant; and a controller configured to estimate an amount of the light incident on said mirror to obtain an estimated amount of the light and to control temperature of the coolant based on measurement obtained by said first thermometer and second thermometer and the estimated amount of light.”

Jurca discloses a thermometer configured to measure the temperature of a coolant (col. 4, lines 26-29).

Lim discloses controlling light exposure based on temperature information (see Abstract).

However, having “a second thermometer configured to measure temperature of the coolant; and a controller configured to estimate an amount of the light incident on said mirror to obtain an estimated amount of the light and to control temperature of the coolant based on measurement obtained by said first thermometer and second thermometer and the estimated amount of light” is known to the art as it is evident by the combined teachings of Jurca and Lim above. Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the cooler of Goldstein by including a second thermometer and a controller to measure and control the temperature of the coolant for at least the purpose to monitor temperature variations within the optical system.

Regarding claim 26, Goldstein further discloses “wherein said first thermometer is a radiation thermometer ([0022], lines 4-6) arranged away from said mirror ([0020], lines 4-6).”

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Eitel et al (4,844,603).

Goldstein discloses a cooler comprising of a heat-radiation plate (225), and a liquid to flow to control temperature of said heat-radiation plate ([0024], lines 3-10). Goldstein does not disclose “a solid heat-transfer element attached to said heat-radiation plate and configured to transfer heat from said heat-radiation plate; and a circulator that circulates cooling liquid or cooling gas so as to cool said solid cooling element.”

However, having “a solid heat-transfer element attached to said heat-radiation plate and configured to transfer heat from said heat-radiation plate; and a circulator that circulates cooling liquid or cooling gas so as to cool said solid cooling element” is known to the art as it is evident by the teaching of Eitel et al (col.4, lines 20-25 and 27-29). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the temperature control mechanism of Goldstein by having a cooling element attached to the radiation plate with a circulation mechanism for the fluid to flow for at least the purpose to reduce any undesired heat transfers within the system.

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Taniguchi (US 2001/0048514).

Goldstein discloses a mirror and a radiation plate. Goldstein does not disclose

- “a mirror barrel configured to accommodate said mirror;
- a mirror support fixed to said mirror barrel, and configured to support said mirror in said mirror barrel;
- and a heat-radiation plate support fixed to said mirror barrel, and configured to support said heat-radiation plate in said mirror barrel.”

However, having “a mirror barrel configured to accommodate said mirror; a mirror support fixed to said mirror barrel, and configured to support said mirror in said mirror barrel; and a heat-radiation plate support fixed to said mirror barrel, and configured to support said heat-radiation plate in said mirror barrel” is known to the

Art Unit: 2851

art as it is evident by the teaching of Taniguchi ([0057], lines 3-6, where Taniguchi teaches a lens group used in a mirror barrel).” Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the mirror of Goldstein by including a mirror barrel with a radiation plate support member fixed to the mirror barrel. The ordinary artisan would have been motivated to modify Goldstein in a manner described above for at least the purpose to reduce vibrations throughout the optical system.

10. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein in view of Bisschops (US 2002/0027644).

Goldstein discloses all of the limitations of the claimed invention and further discloses the reflection mirror apparatus used in a lithography process (see [0001]). Goldstein does not mention a substrate, reticle, light source, projection apparatus, and developing and processing of the substrate.

However, it is conceivable that the aforementioned above is in a lithography process as it is known to the art and evident by the teaching of Bisschops ([0009], lines 8-16 and [0010], lines 1-9). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify Goldstein by having the mirror apparatus used in a lithography apparatus as taught by Bisschops for at least the purpose of controlling the temperatures of optical elements.

***Conclusion***

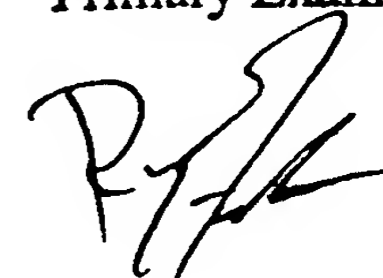
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez  
Examiner  
Art Unit 2851

Rodney Fuller  
Primary Examiner



July 13, 2006